

SYSTEM FOR MINIMIZING DIRECTORY INFORMATION IN SCALABLE
MULTIPROCESSOR SYSTEMS WITH LOGICALLY INDEPENDENT
INPUT/OUTPUT NODES

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ABSTRACT OF THE DISCLOSURE

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10 A system of scalable shared-memory multiprocessors includes processor nodes and I/O
nodes. The I/O nodes connect I/O devices directly to an interconnection network of a system
of scalable shared-memory multiprocessors. Each node of the system includes an interface to
15 a local memory subsystem, a memory cache and a protocol engine. The local memory
subsystem stores memory lines of information and a directory. Each entry in the directory
stores sharing information concerning a memory line of information stored in the local
memory subsystem. The protocol engine in each I/O node is configured to limit to a
predefined period of time any sharing of a memory line of information from the memory
subsystem of any other node. The protocol engine in the home node of the memory line is
20 configured to identify only nodes other than I/O nodes that are sharing the memory line of
information. In one embodiment, I/O nodes that share the memory line of information are not
identified in the directory entry of the memory line, and instead are represented by a count
field, which indicates how many I/O nodes share the memory line of information.

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